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- for students to copy in their own hand-writing
  - ◆ in order to complete their class notes
  - ◆ if student did not have enough time in class
  - ◆ if student was away and missed this section
- for assistants and tutors to follow progress of the concepts taught

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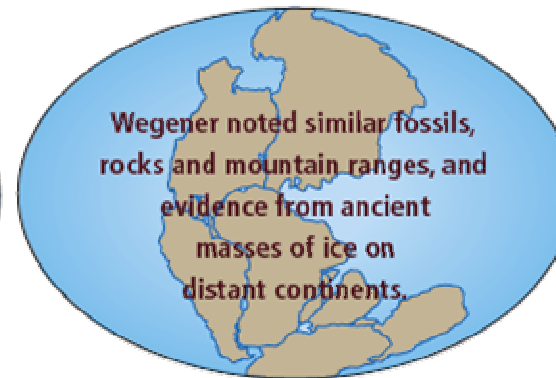
**[ndupuis@sd61.bc.ca](mailto:ndupuis@sd61.bc.ca)    [dupuis.shawbiz.ca](http://dupuis.shawbiz.ca)**

# 12.1 Evidence for Continental Drift



- **Early maps of the world caused Wegener to propose the continental drift theory.**
  - ◆ **The continents looked as though they might fit together like puzzle pieces.**
    - **The continental shelves actually fit together even better.**
  - ◆ **The original, supercontinent was named *Pangaea* by Wegener.**
  - ◆ **Wegener also realized that other evidence also supported his theory.**
    - **There were matching geologic features and rocks on different continents.**
    - **There were matching fossils, like *Mesosaurus*, on different continents.**
    - **There was evidence of different climates (eg. glaciers) on warm continents.**

Like pieces of a jigsaw puzzle, the continents fit together into one, large whole.



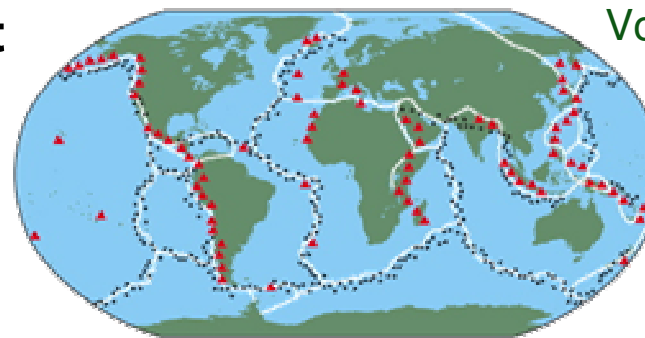
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# How Can Continents Move?



- **Wegener's evidence for continental drift didn't explain how entire continents could change locations.**
  - ◆ **New scientific equipment allowed scientists to measure the slow, but steady, drift of Earth's tectonic plates.**
  - ◆ **It was noted that earthquakes and volcanoes appear in certain patterns, which happen to be along the edges of tectonic plates.**
  - ◆ **Mapping of the ocean floor revealed the Mid Atlantic Ridge, a long mountain range running down the middle of the Atlantic ocean.**
  - ◆ **Rocks taken from the Mid Atlantic ridge were younger than other ocean rocks.**
  - ◆ **Sediments along the Ridge became thicker further away from the ridge.**
  - ◆ **Paleomagnetism shows that iron-based rocks along the ridges are striped with reversing magnetic fields.**



▲ Volcano   · Earthquake   — Plate boundary

Volcanoes are frequently found on boundaries between tectonic plates.

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# Sea Floor Spreading: An Explanation



- **Hess suggested that magma rose to form new rock at certain places.**
  - ◆ Magma (melted rock), rises and falls like warm and cold liquids.
  - ◆ The convection current of magma formed a spreading ridge where it broke through Earth's crust.
    - Like a “new crust” conveyer belt
    - Magnetic striping of basalt rock shows long stripes of new rock moving away from ocean ridges, and also reveals the direction of Earth's magnetic field at that time.
- **Wilson then unified the ideas of Wegener and Hess into the plate tectonic theory.**
  - ◆ Continental drift occurs because of areas like these ridges, that push along tectonic plates floating on Earth's surface.
  - ◆ geologic hot spots are anywhere magma rises to Earth's surface.

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[Take the Section 12.1 Quiz](#)

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